REMARKS/ARGUMENTS

Claims 1 to 27 were pending in the application. New claims 28 and 29 have been added by this amendment.

In the Office Action, claims 3, 4, 10, 16, 17, 19, 20 and 23 were objected to as being dependent upon a rejected base claim, but it was stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 3, 10, 16 and 23 have been so rewritten and so are allowable. Claims 4, 17, 19 and 20, each being dependent directly or indirectly upon one of these rewritten claims, are allowable with them.

In the Office Action, claims 1, 2, 5, 8, 9, 11 - 15, 18, 21, 22 and 24 - 27 were rejected under 35 U.S.C. 103(a) as unpatentable over WO 99/67609 (Hendow) in view of US 5,696,707 (Hentschel *et al.*). The rejection is respectfully traversed on the grounds that the examiner has not made a proper case of *prima facie* obviousness. With all due respect, it appears that the examiner has misinterpreted the rejected claims and misunderstood the cited reference by Hendow.

Claim 1 reads as follows:

> 1. Portable apparatus for measuring parameters of optical signals propagating concurrently in opposite directions in an optical transmission path (16, 16/1,..., 16/9) between two elements (10, 14/1...14/9), at least one (14/1...14/9) of the elements being operative to transmit a first optical signal (S1) only if it continues to receive a second optical signal (S2) from the other (10) of said elements, the apparatus comprising first and second connector means (22, 24) for connecting the apparatus into the optical transmission path in series therewith, and means (32, 38, 46) connected between the first and second connector means for propagating at least said second optical signal (S2) towards said at least one (14) of the elements, and measuring said parameters of said concurrently propagating optical signals (S1, S2).

Independent claim 14, the corresponding method claim, reads:

> 14. A method of measuring parameters of at least one of optical signals propagating concurrently in opposite directions in an optical transmission path (16, 16/1,..., 19/9) between two elements (10, 14/1...14/9), at least one (14/1...14/9) of the elements being operative to transmit a first optical signal (S1) only if it continues to receive a second optical signal (S2), the method comprising the steps of:
>
> connecting first and second connector means (22, 24) of portable measuring apparatus into the optical transmission path in series therewith,
>
> using the apparatus to propagate at least said second optical signal (S2) towards said at least one (14) of the elements, and
>
> measuring said parameters of said concurrently propagating optical signals.

In the present applicant's specific embodiment, the "elements (10, 14/1...14/9)" are the OLT 10 and one of the plurality of ONTs 14/1 ... 14/9 which are interconnected by optical fiber links, i.e.,

the transmission path. As explained on page 5 of the present applicant's specification, the OLT 10 transmits data signals (S2) at 1490 nm wavelength and cable television signals (S3) at 1550 nm wavelength. The 1490 nm signal (S2) is encoded for synchronisation purposes. Each of the ONTs 14/1 to 14/9 will only transmit its respective signal (S1) at 1310 nm wavelength while it continues to receive the 1490 nm signal (S2) from the OLT 10. In order to avoid system shut-down, therefore, it is necessary to measure the parameters of these optical signals while they are propagating concurrently in opposite directions in the transmission path. In preferred embodiments of the present invention, this is achieved by inserting into the transmission path portable apparatus having means for maintaining the concurrent counter-propagation of the signals while allowing parameters of at least one of them to be measured.

In the present applicant's specific embodiment shown in Figure 2, the "maintaining means" is a coupler 32 which connects to respective proximal ends of the transmission path and allows concurrent propagation of the optical signals, in opposite directions, to continue. In contrast, Hendow's Figure 14 shows an optical amplifier (not numbered) between the WDM "taps" 486 and 487 connected to the proximal ends of the transmission path, i.e., optical fiber link 482. It is common knowledge that such optical amplifiers are not bidirectional, so the optical link 482 cannot support propagation of optical signals through the intermediate node 480 in opposite directions. Rather, the "1530-1560 nm traffic" shown as passing through the optical amplifier will do so unidirectionally.

The examiner asserted that the term "two elements" in claim 1 reads onto either of Hendow's two WDMs 486, 487 (one element) taken with his transceiver 488 (the other element). With all due respect, this is untenable. Figure 14 identifies the signals which pass between each of the WDM taps 486 and 487 and the transceiver 488 as a "1510nm supervisory channel", i.e., an out-of-band signal comprising low speed data. The signals do not propagate concurrently, with the transmission of the one being conditional upon reception of the other, and their "parameters" are not measured by the optical network monitor 484. Rather, they propagate alternately, since, when referring to his Figure 14, Hendow states at page 16, lines 13 to 18 that

> "A site controller 490 is coupled to the transceiver and directs the transceiver 488 to received (*sic*) and transmit data. When the site controller 490 directs the transceiver to receive data, the data is transmitted to the ONM 484 of the present invention for monitoring."

Clearly, the site controller 490 simply controls the transceiver 488 so that it either transmits data or receives data - i.e., alternately. There is no mention by Hendow of the transceiver 488 not being allowed to transmit signals if it is not also receiving signals. Consequently, the components 486, 487 and 488 do not satisfy the requirement, in claims 1 and 14, for "two elements (10, 14/1...14/9), at least one (14/1...14/9) of the elements being operative to transmit a first optical signal (S1) only if it continues to receive a second optical signal (S2)", i.e., from the other element.

It is worth noting again that the problem addressed by the present invention is the need to maintain reception of the signals (S2) by the one element (e.g., an ONT 14/1) while monitoring at least one of the signals propagating concurrently in opposite directions in the transmission path. As mentioned in the response submitted on August 10, 2006, the existence of this problem was acknowledged quite recently in the article entitled "Fundamentals of a Passive Optical Network (PON) by David Cleary, Ph.D., then Vice President, Advanced Technology of Optical Solutions, Inc. where it was stated that:

> *It should be noted that only the downstream light can be measured. This is because an ONT will not transmit unless it is in constant communication with an OLT.*

Hendow does not address this problem and does not disclose or suggest any solution, let alone that set out in the present applicant's claims 1 and 14. Hendow's intermediate network node simply would not solve the problem, for the specific technical reasons outlined above. Even if, as suggested by the examiner, a skilled person added connectors of the kind disclosed by Hentschel *et al.*, Hendow's intermediate network node 480 would be incapable of maintaining the required "constant communication" between the two elements (e.g., an ONT and an OLT) while measuring either one of the concurrently counter-propagating optical signals.

It is also worth noting that the examiner's suggestion that a skilled person would add connectors to Hendow's intermediate network node appears to have been made with the benefit of hindsight culled from a reading of the present applicant's specification, since there is no such suggestion in Hendow's disclosure (or, indeed, Hentschel *et al.*'s disclosure).

In view of the foregoing, it is submitted that claims 1 and 14 are allowable over the applied references. Each of claims 2, 5, 8, 9, 11 - 13, 15, 18, 21, 22 and 24 - 27 is dependent directly or indirectly upon either claim 1 or claim 14 and so is allowable with it for the same reasons.

Claim 28 is a new independent method claim which includes all of the features of claim 14, and so is patentable for the same reasons. It also includes most of the features of claim 27, and reads as follows:

> 28. A method of measuring parameters of at least one of optical communications signals propagating concurrently in opposite directions in an optical transmission path (16, 16/1,..., 19/9) interconnecting two optical network elements (10, 14/1...14/9) in an optical network, at least one (14/1...14/9) of the optical network elements being operative to transmit a first optical signal (S1) only if it continues to receive a second optical signal (S2), the method comprising the steps of:
>
> connecting first and second connector means (22, 24) of portable measuring apparatus to respective portions of the optical transmission path to connect the apparatus into the optical transmission path in series therewith, the optical network elements being located at respective distal ends of said transmission path portions,
>
> using the apparatus to propagate at least said second optical signal (S2)

RECEIVED
CENTRAL FAX CENTER
OCT 27 2006

towards said at least one (14) of the optical network elements, and

measuring said parameters of said concurrently propagating optical signals.

Thus, claim 28 specifically recites that the concurrently propagating signals are optical communications signals propagating in a transmission path between two optical network elements in an optical network, the connectors of the portable apparatus connect to opposite portions of the transmission path so that the portable apparatus is in series with them, and the optical network elements are located at respective distal ends of the transmission path portions. Hendow's WDM "taps" 486, 487, which the examiner asserted were equivalent to the "two elements (10, 14/1 ... 14/9)" of the present claims, are not located at distal ends of such a transmission path.

Also, it is well established that a patent claim must not be construed *in vacuo*, but rather in the context of the specification as understood by a person of ordinary skill in the art. Claim 28 recites "optical network elements" which are interconnected by a transmission path "in an optical network". A person of ordinary skill in this art would understand that the WDM taps 486,487 disclosed by Hendow are not optical network elements and the connections between Hendow's WDM taps 486 and 487 and the transceiver 488 do not constitute a transmission path in an optical network. Moreover, a person of ordinary skill in this art would understand that Hendow's "1510nm supervisory channel" does not constitute an "optical communications signal" as required by new claim 28.

It is submitted, therefore, that claim 28 is patentable over the cited references.

New claim 29 is a "portable apparatus" claim corresponding to method claim 28 and so is patentable for the same reasons.

The undersigned thanks the examiner for the courtesy of brief telephone interviews on October 18 and 22, 2006, during which the examiner pointed out that certain claim features lacked a proper antecedent and that there were inconsistencies in the reference numbers in some claims. The foregoing amendments correct the problem with the antecedents. The reference numbers were in the claims because the present application was derived from an international patent application. Since they are not required, all of the reference numbers have been deleted.

In view of the foregoing, favourable reconsideration and early allowance of the application are respectfully requested.

Respectfully submitted,

T. Adams

Thomas Adams, Reg. No. 31,078